

**Abstract of the Disclosure**

The present invention relates to passivation of a gallium nitride (GaN) structure before the GaN structure is removed from an epitaxial growth chamber. The GaN structure includes one or more structural epitaxial layers deposited on a substrate, and the passivation layer deposited on the structural epitaxial layers. In general, the passivation layer is a dielectric material deposited on the GaN structure that serves to passivate surface traps on the surface of the structural epitaxial layers. Preferably, the passivation layer is a dense, thermally deposited silicon nitride passivation layer.